



Traumatic Brain Injury – Effects and Impacts

By Linda Balsiger, M.S., CCC-SLP

What is Traumatic Brain Injury?

A traumatic brain injury (TBI) is an injury to the brain caused by an external force that occurs after birth. This force can be a major trauma such as a car accident or the shaking of an infant, or a mild blow such as a concussion. This article explores the range of areas impacted by a TBI, and considerations for children returning to school after a TBI.

Effects of Traumatic Brain Injury

A TBI can impact skills and functioning across cognitive, speech-language, physical, and emotional/behavioral domains. The degree to which these areas are impacted depends upon the location and severity of the injury; however, even a mild concussion may have an impact on cognitive skills such as attention, learning, and memory.

- 1) **Cognitive Skills** - Cognitive skills are the skills required to process and remember information, plan activities, and learn new information. A person with TBI may experience difficulty in the following areas:
 - Thinking and Processing Skills: Problem solving, abstract concepts, reasoning, speed of information processing.
 - Memory: Short-term memory and learning of new information. Long-term memory is typically less affected.
 - Attention: Focus, concentration, distractibility, persistence, multi-tasking.
 - Executive function skills: Goal setting, planning, organization, task initiation, impulsivity, judgment, and self-monitoring.
- 2) **Speech/Language** - Problems may occur with:
 - Speech: Speech is one of the most complex activities we perform, and requires precise coordination of respiratory muscles, vocal fold vibration, velopharyngeal function, and tongue/lip movement. A weakening of any of those muscles or the nerves used to coordinate and control them can make speech too quiet, slurred, or disjointed. In severe cases, there may be no speech at all.
 - Oral Language: Problems can occur with word-finding, expressive language (organizing and expressing thoughts, grammar), and receptive language (listening and processing spoken information).
 - Reading, Spelling, Writing: These are language-based skills, and language problems can affect the ability to accurately decode words, encode (or spell) words, comprehend written material, learn and retain new vocabulary, and express ideas in written form.
 - Social Communication Skills: Diminished social communication skills can cause difficulties with turn-taking, topic maintenance, perspective taking, reading nonverbal cues (facial expressions, body language), recognizing sarcasm and inference, understanding humor, “reading” of group behavior norms, and the ability to recognize and inhibit inappropriate remarks.
- 3) **Physical** - Physical impacts of a TBI range from complete paralysis in severe cases, to lingering headaches or fatigue in cases of mild concussion. Areas of physical functioning that may be affected include: balance, walking, movement of arms and legs, muscle spasticity, writing, drawing, hearing, and vision.



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- 4) **Emotional/Behavioral** - Areas of emotional functioning that may be impacted include:
- Emotional reactivity – overreacting or flatness (lack of emotional affect).
 - Emotional lability and control – outbursts, aggressive behavior, diminished ability to inhibit inappropriate responses.
 - Mood swings, anxiety, depression, agitation.

Returning to School – Federal Law and Academic Considerations

The Individuals with Disabilities Education Act (IDEA) recognizes TBI as a protected disability under Federal Law. Children who have suffered a TBI need a thorough evaluation when they return to school, to determine special education needs and whether an Individualized Education Plan (IEP) is appropriate for services in the areas that are impacted. Educators may also propose and implement educational strategies that will enhance learning.

Students with TBI may also need a formal plan for accommodations in the classroom and in testing situations. Depending on the nature of the disabilities present, testing accommodations may include extended time, more frequent breaks, readers, separate testing location, alternate test formats, larger print, and assistive devices (including scribes or calculators).

First Steps

The first step to understanding and dealing with TBI is a medical evaluation, followed by appropriate intervention. Members of the team that diagnose and provide intervention typically include: doctors, nurses, neuropsychologists, physical therapists, occupational therapists, speech-language pathologists, and social workers.

Immediate intervention is important after a TBI, because the first months of recovery are the time of greatest brain healing, as well as re-organization of neurons in response to trauma. Services may include physical therapy, occupational therapy, speech-language therapy, special education, and counseling.

Damage to the brain from an injury may also have lingering effects that impact a child as their brain grows and develops. New problems may crop up that were not noticed before, and some parents and teachers may not be aware that these problems are the result of the initial brain injury – particularly if it was a mild injury. As children's brains grow and develop, they have to learn new cognitive skills and new academic material. Ongoing monitoring is important to ensure that a child continues to receive the services and support that they need to be successful in school and in life.

Linda Balsiger, M.S., CCC-SLP is a literacy and learning specialist and certified state-licensed speech-language pathologist. She is the owner of Bend Language & Learning, a private practice dedicated to the treatment of language and language-based learning disabilities (www.bendlanguageandlearning.com).

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